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Antarctic Ship-borne Tourism: Perspectives on Shipping Management

Antarctic Ship-borne Tourism: Perspectives on Shipping Management

1. Introduction

The purpose of the Meeting of Experts (ATME) in Wellington, New Zealand December 9-11, 2009 is to "endeavour to accelerate consideration of matters relating to the management of ship-borne tourism in the Antarctic Treaty area and to provide recommendations for consideration by the 33rd Antarctic Treaty Consultative Meeting." Consequently, this paper focuses on the current management and regulation of shipping, and in particular tourism shipping. The paper's recommendations draw from various papers and briefings prepared for the Antarctic Treaty Consultative Meetings (ATCMs) and meetings of the International Maritime Organization (IMO) in the past two years by the Antarctic and Southern Ocean Coalition (ASOC). This paper identifies further needs with respect to the management and regulation of shipping to ensure that the highest safety and environmental standards are applied to ships operating in Antarctic waters. For an analysis of how to advance a tourism vision and regulatory needs, refer to ASOC's companion paper submitted at this ATME[1].

The following section summarises ASOC's recommendations for the ATME. It, along with subsequent sections, is largely structured according to the headings developed for the Terms of Reference agreed for the ATME.

2. ASOC Recommendations for the ATME

Recent shipping incidents:
ASOC urges the ATME to agree on the importance of comprehensive investigations and extensive reports and recommendations being issued by the flag states following major incidents in Antarctic waters, and in particular encourages the ATME to seek such reports from the flag states representing the *MV Ushuaia* and *Ocean Nova - Panama* and *Bahamas* in response to the recent incidents involving these vessels.

Recent developments in the International Maritime Organization relating to ship-borne tourism in the Antarctic Treaty Area:
ASOC urges the ATME to identify standards and practices for tourism shipping which should be incorporated into a legally binding IMO Polar Code.

ASOC urges the ATME to support the adoption and earliest possible implementation of the amendment to MARPOL on heavy fuel oil carriage and use in Antarctic waters.

Prevention of a maritime incident in the Antarctic Treaty Area:
ASOC proposes that the outcomes of the ICG on vessels chaired by Norway should be reviewed by the ATME in Wellington, and that the Parties should assess whether further measures are required to mitigate risks associated with passenger vessels operating in Antarctic waters. In addition, the primary areas of deficiency and necessary measures should be brought to the attention of both the IMO's DE sub-committee to be considered during the development of the Polar Code, and to the XXXIII Session of the ATCM.

Further ASOC urges the ATME to consider important mitigation measures such as mandatory ship reporting, routing measures and greater protection of areas with higher risks, through for example the designation of areas to be avoided (ATBA) for safety and / or environmental reasons, which could form the associated protective measures for one or more PSSAs.

ASOC proposes that the ATME review the ICG's outcomes and propose specific measures to mitigate risks and address subjects for which there may be inadequate controls, including:

ship design and equipment:
- agreeing appropriate ship ice-strengthening standards for vessels operating in various types of ice conditions,

[1] Making Tangible Progress on a Strategic Vision for Antarctic Tourism

- ensuring the highest possible stability standards for intact and damaged ships,
- avoiding the threat of icing, both build-up on the vessels' structure and icing of equipment,
- requiring adequate lifesaving equipment on board vessels

crew training:
- training for ice navigators and ships crews in Antarctic waters,
- clear, comprehensive operational provisions and training for use of lifesaving equipment,

search and rescue:
- improving search and rescue capacity and coordination,

information provision:
- improving charting, weather and ice forecasting and flows of information

shipping routeing and monitoring:
- considering mandatory ship reporting, ships' routeing and areas to be avoided to minimise risks of collision and grounding and the protection the Antarctic environment.

Port State Control (PSC):
The ATME should urge ATCPs to introduce a collaborative system on port state control (PSC), share information and increase inspections and controls over vessels operating in the Antarctic region in order to ensure strict compliance with the highest safety and environmental standards, for example through an Antarctic PSC protocol or memorandum of understanding (MOU). The ATME also should identify priority international shipping instruments and current status of ratification and encourages rapid ratification by all Antarctic Treaty parties.

Vessel traffic monitoring and information system:
ASOC submits that further consideration should be given to the development of an Antarctic vessel traffic monitoring and information system, starting first with the Antarctic Peninsula area and with the Dumont d'Urille Sea / Ross Sea area.

Vulnerability assessment, routeing and PSSAs:
ASOC submits that a vulnerability assessment should be undertaken of the prime tourism areas, and that consideration should be given to establishing routeing measures and areas to be avoided (for both safety and environmental considerations).

Operational wastes:
ASOC submits that ATME consider further the options available to strengthen the regulation of discharges of sewage, sewage sludge and greywater.

ASOC urges that this ATME support the proposal for a zero discharge approach to garbage discharges in the Antarctic, and further consider measures aimed at eliminating illegal discharge of garbage, and particularly plastics.

Other environmental impacts from passenger shipping:
ASOC urges that this ATME identify the threat from other environmental impacts from ship-borne tourism that require further consideration, including air emissions and underwater noise, and discuss potential solutions in the Antarctic context and contribute to the ongoing discussions within the IMO.

Emergency response, compensation and liability:
ASOC urges that the ATME give consideration to establishing a mechanism for a coordinated response to a major environmental ship-based emergency. The ATME should encourage rapid ratification and full implementation of IMO compensation and liability instruments. In addition, ATCPs should ratify Annex VI of the Antarctic Treaty Protocol as a matter of urgency (see companion ATME paper).

Vessels flagged to non-Parties and cooperation with the IMO:
ASOC urges that the ATME recognise the importance of integrating actions and measures agreed by the ATPs with IMO processes, and recommends that ATCPs undertake to work collectively within the IMO to address the associated environmental impacts of all vessel activities using the area.

3. Trends in ship-borne tourism in the Antarctic Treaty Area[2]

Tourism in Antarctica over the past decade has been characterised by steep annual increases, diversification, and geographic expansion. Events during that period have included:

- Continuing increases of tourism resulting in tourist numbers doubling every few years.
- Establishment of what could aptly be called "mass tourism destinations" and resulting tourism concentration in certain sites, and in certain regions.
- Extensive use of the Antarctic Peninsula.
- Increasing geographic penetration of the Antarctic.
- Diversification of tourism activities.
- Shifts in the structure of the tourism industry.

Some operating companies are now owned by parent companies that are not traditional Antarctic operators, and involve practises such as the use of larger ships from the global cruise industry and the use of flags of convenience, with resulting loss of effective control by Antarctic Treaty Parties. These changes have influenced the way ship-borne tourism is conducted, with a growing probability of maritime incidents resulting from more ships operating in the area. A number of incidents involving cruise ships have taken place in the past few years. The potential environmental problems are compounded as larger, non-ice class ships enter the market.

4. Recent shipping incidents

Information on recent shipping incidents in Antarctic has been summarised and presented both to ATCMs and meetings of the IMO. Reported increases in shipping, in the Southern Ocean, including but not limited to shipping related to tourism, will inevitably result in an increased risk of incidents and potentially disastrous accidents in the Southern Ocean. Recent incidents have included several ships running aground, resulting in some cases in the spillage of unknown quantities of fuel; a ship catching fire; ships being left adrift after losing power; and a ship sinking (Annex I).

To aid the development of a new legally binding instrument to regulate polar shipping, it is vitally important that the discussion is informed by comprehensive analysis of recent incidents to understand the prime causes and ensure that these are addressed. For example, the report of the sinking of the Liberian flagged *Explorer* in November 2007 reveals that the main cause of the accident was the Master's misjudgement of the ice field encountered, believing it to be relatively thin first-year ice when it was actually harder, thicker land ice. Because of this judgment, the *Explorer* hit the ice at full speed, causing significant damage along 3.6 meters of the hull. This damage led to the extensive flooding and eventual sinking of the ship. The Master's mistake was likely due to lack of experience in the Antarctic. According to the report, "[he] was very experienced in Baltic waters but he was unfamiliar with the type of ice he encountered in Antarctic waters."[3]

It seems the Master made the right and timely decision to abandon the ship when it was clear that flood abatement efforts had failed, but the evacuation process was described by numerous passengers as

[2] This section is based on ASOC (2008) *A decade of Antarctic tourism: Status, change, and actions needed*. XXXI ATCM, ASOC IP041. See also: Bastmeijer K and Roura R (2008): "Environmental Impact Assessment in Antarctica." In: Bastmeijer K and Koivurova T (eds.): *Theory and Practice of Transboundary Environmental Impact Assessment*, pp. 175-219. Monographs Series on Legal Aspects of Sustainable Development. Leiden: Brill/Martinus Nijhof Publishers, p: 209; and Tin, T., Hemmings, A.D. & Roura, R. (2008): "Pressures on the Wilderness Values of the Antarctic Continent." *International Journal of Wilderness* 14(3): 7-12.
[3] Republic of Liberia. 26 March 2009. Decision of the Commissioner of Maritime Affairs and the Report of Investigation in the Matter of Sinking of Passenger Vessel EXPLORER (O.N. 8495) 23 November 2007 in the Bransfield Strait near the South Shetland Islands.

disorganized and chaotic. It does not appear that established safety procedures were followed or that passengers had been adequately briefed on what to do in such an emergency, and the equipment on board was inadequate for the conditions, including open lifeboats and no thermal gear. The Master also failed to remove the Voyage Data Recorder (VDR) and the Crash Survival Module prior to departing the ship, even though he had been reminded to do so in communications with a GAP Adventures technical manager. The VDR would have provided definitive data on the collision with ice.[4]

In addition to these serious failures, there were numerous other problems, including the watertight door into the separator room being left open (standard procedure indicates that this door should only be opened for enough time to allow certain personnel to pass through); door seals to the generator room failed, allowing water to leak near electrical equipment; three out of four lifeboat engines did not start; and passengers were unevenly distributed in the lifeboats, leading to the very risky transferring of passengers from overcrowded lifeboats on the open water while passengers and crew manually held the crafts together. Inoperable lifeboats meant that many passengers travelled in Zodiacs, which unlike lifeboats could not be hoisted onto the *Nordnorge's* deck during rescue. These passengers had to climb a rope ladder up the side of the ship, which some found physically difficult.

ASOC welcomed the report issued by the Republic of Liberia and the recommendations, and particularly wishes to highlight those that will be especially helpful in preventing future accidents:

- competency training for ice navigators should be developed to ensure that all ship captains are qualified to assess Antarctic ice.
- current requirements for deck and shell plating thickness and flooding boundaries should be reassessed to determine if vessel structures, systems and components present a serious risk following accidents;
- tourist operators should review emergency procedures in detail and revise as necessary to ensure orderly evacuations and proper retrieval of VDR equipment
- partially enclosed lifeboats should be required as a minimum on all vessels carrying passengers and travelling to the Antarctic
- thermal immersion suits should be carried for all passengers and crew (as recommended in the IMO's Polar Guidelines).

ASOC urges the ATME to agree on the importance of comprehensive investigations and extensive reports and recommendations being issued by the flag states following major incidents in Antarctic waters, and in particular encourages the ATME to seek such reports from the flag states representing the MV Ushuaia and Ocean Nova - Panama and Bahamas - in response to the recent incidents involving these vessels.

5. Recent developments in the International Maritime Organization relating to ship-borne tourism in the Antarctic Treaty Area

In considering the latest developments at the IMO relating to ship-borne tourism, ASOC notes that there are two primary developments of particular relevance – the development of a mandatory Polar Code and the ban on the use and carriage of heavy grade fuel oil in Antarctic waters. There are, however a number of more generally applicable developments also of interest, which will have relevance to ship-borne tourism in Antarctic waters.

A. Development of a Polar Code. ASOC has supported the proposal for a high-priority work programme item for the IMO's Ship Design & Equipment (DE) sub-committee to develop legally binding requirements for application in Polar Regions. Work is due to commence in February 2010. Attached (see Annex II) is a Briefing identifying the priority outcomes for a legally binding code for polar shipping prepared by ASOC, which will be developed further ahead of the next DE sub-committee meeting (February, 2010).

[4] International Maritime Organization (IMO) Guidelines require removal of the VDR after an accident if possible. The Liberian report concludes that the Master should have been able to retrieve the device.

ASOC submits that a legally binding Polar Code should address:

- risks to human safety and of oil spills associated with vessels in remote and frequently hazardous waters;
- operational threats to the environment and wildlife including legal and illegal discharges of oils, chemicals, treated and untreated sewage, sewage sludge and grey water, garbage and other substances, including offal discharges;
- leaks from refuelling operations;
- introduction of alien species through ballast water discharges and on ships' hulls;
- damage caused by leaching from anti-fouling systems;
- air emissions, in particular black carbon and NOx;
- underwater noise, and
- ship strikes

A number of these issues are addressed in more detail below since they are already the subject of broader discussions within the IMO. While not all of these items have direct relevance to ship-borne tourism, the development of a legally-binding IMO instrument focused on polar shipping presents the best opportunity to ensure the highest standards and practices are adopted by the shipping sector, including ships carrying tourists.

ASOC urges the ATME to identify standards and practices for tourism shipping which should be incorporated into a legally binding IMO Polar Code.

B. **Ban on the use and carriage of heavy fuel oil**. The Antarctic Treaty Consultative Parties (ATCPs) in 2005 request the IMO to take steps to restrict the use of heavy fuel oil in Antarctic waters because of the high risk of fuel release in the Antarctic Treaty Area due to conditions such as icebergs, sea-ice and uncharted waters, and the high potential of environmental impacts associated with a spill of heavy fuel oil. An amendment to the MARPOL Convention was approved by the Marine Environment Protection Committee (MEPC) in July 2009 which will prohibit the carriage and use of heavy fuel oil on ships operating in Antarctic waters.[5] The amendment is due to be adopted at the next MEPC meeting in March 2010 and it is expected to take effect in 2011.

ASOC urges the ATME to support the adoption and earliest possible implementation of the amendment to MARPOL on heavy fuel oil carriage and use in Antarctic waters.

C. **Reviewing and amending Annex V to MARPOL on garbage**. A correspondence group has been tasked with reviewing and making recommendations on the necessary amendments to MARPOL Annex V and its Guidelines. Some of the issues under consideration could potentially have significance for the cruise industry - e.g. a general prohibition on the discharge of garbage into the sea. For the Southern Ocean one of the most relevant issues is abandoned, lost or otherwise discarded fishing gear. It is suspected that some illegal waste disposal also occurs. In addition, the work of the Correspondence Group has been actively considering whether zero discharge status for all garbage would be appropriate for Antarctic waters. ASOC has welcomed the support for a zero discharge regime for all garbage in the Antarctic, and believes that this would not only in keeping with the spirit of designating the Antarctic as a Special Area, but will also make enforcement of all garbage discharge regulations simpler.

D. **Ship strikes.** At IMO's MEPC 58th Session in late 2008 draft interim guidance on the avoidance of ship strikes of cetaceans was accepted. This was subsequently endorsed at MEPC in July 2009, and an IMO Circular[6] has been issued.

[5] Fuel quality restrictions have recently been approved by the Norwegian archipelago of Svalbard in the High Arctic, which is largely a natural reserve. The government has introduced new regulations that prohibit the use of heavy oils on vessels sailing within the three largest national parks on Svalbard. See http://www.sysselmannen.no/hoved.aspx?m=44365&amid=2836074, accessed 21 October 2009.

[6] MEPC.1/Circ. 674

E. **Underwater noise**. A Correspondence Group under MEPC has been established to consider further the minimising the introduction of incidental noise from commercial shipping operations to reduce the potential adverse impact on marine life. The interim report of the Correspondence Group was discussed at MEPC in July 09, and further work will be undertaken before the next meeting in March 2010. ASOC's concern focuses on the noise impacts from cruise ships, icebreakers and research vessels and appropriate noise-reducing measures.

F. **Sewage**. In July 2009, MEPC considered a paper from ASOC Member WWF demonstrating that present IMO regulations are insufficient to protect sensitive areas against nutrient emissions from international shipping and proposing voluntary actions by passenger ships and more stringent discharge regulations for passenger ships sailing in eutrophicated semi-enclosed and closed sea areas. ASOC submits that there are similar concerns for sensitive Antarctic waters, even though some of these do not qualify as semi-enclosed or closed and may not be currently eutrophicated. Following MEPC, IMO issued a circular encouraging all passenger vessels navigating in semi-enclosed and closed sea areas which are threatened by eutrophication to refrain from discharging their waste water into the sea and to dispose of it only in port reception facilities, if available. MEPC.1/Circ.685 (8/18/09). In addition, during the discussions, Finland announced its intention to work with other Baltic States and propose amendments to MARPOL Annex IV concerning the establishment of Special Areas where more stringent requirements on discharge of sewage from ships would apply.

G. **Crew Training**. In 2008, Finland submitted a proposal to IMO's DE sub-committee on the development of training courses on operation of ships in ice-covered waters, and in February 2009, Norway submitted a proposal to incorporate mandatory training and certification requirements for navigators on ships operating in ice conditions in the context of an ongoing revision of the IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) adopted in 1978, which is being addressed by IMO's Standards for Training and Watch-keeping (STW) sub-committee. In February 2009, a Correspondence Group was established to develop a preliminary proposed text for training guidance for personnel operating in Arctic and Antarctic ice-covered waters.

6. Maritime Safety in the Antarctic Treaty Area

A. Prevention of a maritime incident in the Antarctic Treaty Area

The ATCM's Intersessional Contact Group (ICG) on issues concerning passenger ships operating in Antarctic waters spent two years investigating the risks associated with passenger vessels in Antarctic waters. During its examination of issues related to the prevention and mitigation of a maritime accident the following hazards were identified: unknown submarine topography and inaccurate charting, localized or extreme weather conditions, variable ice conditions, inexperienced crews, deficiencies in search and rescue coordination, coverage and assets, and tender operations. For each hazard a number of "initiating" events were identified such as grounding, collision with ice, stranding or becoming stuck in ice, disabling of a vessel on account of e.g. a damaged propeller, navigational errors, loss of propulsion, and capsizing. This resulted in five areas of absent or inadequate control measures being identified:

- training,
- search and rescue,
- lifesaving,
- vessel construction, and
- inadequate charting and weather and ice forecasting.

While the ICG identified these areas during the risk assessment process ASOC submits that this important work has not yet been completed. A process of risk assessment has been developed which identified a number of areas in need of attention in order to reduce and minimise the risk of accidents, however no actions to address the areas of deficiency were identified. In addition, ASOC is concerned that the

prioritisation process used has unfortunately resulted in a small number of issues in need of attention being inadvertently excluded, for example, mandatory ship reporting, routeing of ships and identification of areas which should be avoided.

ASOC proposes that the outcomes of the ICG are reviewed by the ATME in Wellington and assessed as to whether further measures are required to mitigate risks associated with passenger vessels operating in Antarctic waters. In addition, the primary areas of deficiency and necessary measures should be brought to the attention of both the IMO's DE sub-committee to be considered during the development of the Polar Code and to the ATCM XXXIII.

Further ASOC urges the ATME to ensure that important mitigation measures such as mandatory reporting, routing measures and protection of areas with higher risks, through for example the designation of areas to be avoided (ATBA) for safety and / or environmental reasons, which could form associated protective measures for one or more PSSAs.

ASOC proposes that the ATME review the ICG's outcomes and propose specific measures to mitigate risks and address subjects for which there are inadequate controls, including:

ship design and equipment:
- agreeing appropriate ship ice-strengthening standards for vessels operating in various types of ice conditions,
- ensuring the highest possible stability standards for intact and damaged ships,
- avoiding the threat of icing, both build-up on the vessels' structure and icing of equipment,
- requiring adequate lifesaving equipment on board vessels

crew training:
- training for ice navigators and ships crews in Antarctic waters,
- clear, comprehensive operational provisions and training for use of lifesaving equipment,

search and rescue:
- improving search and rescue capacity and coordination,

information provision:
- improving charting, weather and ice forecasting and flows of information

shipping routeing and monitoring
- considering mandatory ship reporting, ships' routeing and areas to be avoided to minimise risks of collision and grounding and the protection the Antarctic environment.

B. Port State Control (PSC)

The success of any existing and new measures to improve both shipping safety and environmental protection in the Southern Ocean will only be as good as the processes installed at a national level by both port states and flag states for implementation and enforcement. ASOC believes that greater attention to port state control is fundamental, including an increase in inspections and controls over vessels operating in the Antarctic region, in order to ensure strict compliance with the highest safety and environmental standards. Alongside PSC there is an urgent need for all Antarctic Treaty Parties to ratify and implement existing international shipping instruments (see Annex III), so that strict compliance with the international safety and environmental standards can be ensured. ASOC proposes that ATCPs to establish a coordinated port state control system based on models used in other regions, such as the Paris Memorandum of Understanding (MOU) on Port State Control. Each authority signatory to the Paris MOU agrees to maintain an effective system of port state control, has an obligation to inspect a stated % of foreign vessels, and also consults, cooperates and exchanges information with other members of the MOU. A MOU system could also introduce arrangements to ban ships with a multiple detention history, jumping detention or failure to comply with the conditions of release from detention, and introduce a mandatory inspection system which can not only ensure that ships are inspected at appropriate intervals, but also assess the risk they pose based on the

inspection record of the ship, the performance of the company which operates the ship, the country which registers the ship and any organisation which carries out work on behalf of the flag State is assessed.

Consideration should also be given to:
- enhancing communication links between the competent authorities and ports of the members,
- to methods of notifying interested parties in the event of exceptionally bad weather or sea conditions, and
- to identification of places of refuge for ships in distress.

The ATME should urge ATCPs to introduce a collaborative system on port state control, share information and increase inspections and controls over vessels operating in the Antarctic region in order to ensure strict compliance with the highest safety and environmental standards, for example through an Antarctic PSC protocol or MOU. The ATME also should identify priority international shipping instruments and list their current status of ratification, and encourage rapid ratification by all Antarctic Treaty parties.

C. Vessel Traffic Monitoring and Information System

The remoteness of the region and the need to ensure that search and rescue facilities are sufficient to the need provide the rationale for further consideration of developing an Antarctic vessel traffic monitoring and information system. ASOC believes there needs to be a comprehensive system of vessel traffic monitoring for Antarctic vessels to enhance safety of maritime traffic, which includes the vessels' relevant characteristics and allows members to exchange data in an electronic format. While Antarctic waters are extremely remote, recent developments including Long Range Identification and Tracking (LRIT), which is under ongoing consideration by IMO, the mandatory use of Automatic Identification Systems (AIS) for enhanced ship monitoring which is required on all passenger vessels of any size, CCAMLR systems to monitor fishing vessels, and current voluntary reporting by passenger vessels could provide the basis for the development of such a system. ASOC believes this is essential to establish, apply and enforce better standards for vessels and also to improve the ability of Maritime Rescue and Coordination Centres to respond to maritime safety (search and rescue) and environmental incidents. Vessel routeing, monitoring and control measures need to be considered for areas where there is uncertainty about ice flows or hydrographic conditions, particularly the busiest areas frequented by cruise vessels.

ASOC submits that further consideration should be given to the development of an Antarctic vessel traffic monitoring and information system, starting first with the Antarctic Peninsula area and Terre Adélie to Ross Sea area.

7. Protection of the Antarctic Environment

Many of the comments already made under Maritime Safety equally apply to consideration of Protection of the Antarctic Environment, particularly those that focus on minimising or eliminating the risks of an incident - e.g. a collision with another ship or ice, grounding, and engine or equipment failure all of which could result in environmental damage. ASOC reiterates the importance of the outcome of the ICG work being considered further by the ATME and the need for broader discussion to take place to identify the necessary measures to reduce risks to both safety and the environment.

In addition to areas already identified, ASOC proposes further consideration of the following:

A.Vulnerability assessment, routeing, and PSSAs. Greater consideration is necessary of the value of establishing routeing measures such as traffic separation schemes and deepwater routes, and areas to be avoided (ATBAs). While ASOC recognises that a vulnerability assessment of the whole region, while ideal, might be unwieldy to undertake in a single exercise, a vulnerability assessment of the prime tourism areas - e.g. the Antarctic Peninsula and the Ross Sea to Terre Adélie, would be more reasonable and could be used to (1) assess the value of seeking Particularly Sensitive Sea Area (PSSA) designation, (2) develop appropriate routeing measures, and (3) identify ATBAs. Routeing measures and ATBAs could form the basis of a suite of associated protective measures should PSSA designation be deemed appropriate.

ASOC submits that a vulnerability assessment be undertaken of the prime tourism areas, consideration given to the value of establishing routeing measures and areas to be avoided (for both safety and environmental considerations).

B. Operational wastes. With respect to routine operations with an environmental impact, ASOC submits that the ATME should consider the need for a review of Annex IV to the Environmental Protocol, with a particular focus on sewage, sewage sludge, greywater (not currently addressed) and garbage. The increasing number of vessels using Antarctic waters inevitably results in increased discharges of sewage, sewage sludge, greywater and ground food wastes. Even when treated, sewage, sewage sludge and greywater contain pollutants and pathogens that are harmful to marine ecosystems, particularly in a pristine environment such as Antarctica, while sewage and waste disposal could also result in the introduction of non-native species.

Stronger controls of sewage, sewage sludge and greywater discharges could be addressed through amendments to Annex IV of the Environment Protocol and/or through Annex IV to the IMO MARPOL 73/78 Convention. Further consideration is needed of a variety of options to control sewage, sewage sludge and greywater discharges, including:

- banning all discharges of treated or untreated sewage, sewage sludge and greywater from vessels operating south of 60^{o}S (or south of the Antarctic Convergence), and certified to carry more than 12 people;
- the creation of sewage / greywater "no discharge zones" in the most sensitive and biologically rich areas such as within a stated distance of the ice face, in or adjacent to Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs), near to important wildlife populations, and within or adjacent to marine protected areas; and
- requiring advanced waste water treatment systems on board all vessels south of 60 degrees S.

ASOC submits that ATME consider further the options available to strengthen the regulation of discharges of sewage, sewage sludge and greywater.

The illegal disposal of garbage from vessels remains a problem, both on shores and in wildlife and bird colonies, and current regulations on the disposal of food waste may not be suitable to prevent introductions of non-native species. Based on CCAMLR data, it seems that much of the plastic rubbish recorded from actively monitored sites within the Southern Ocean comes from fishing boats, in the form of discarded fishing gear, including synthetic string, longline and fishing net, but a considerable number of other plastic materials are also found, including packaging bands, plastic bottles and broken pieces of plastics. There have been some recent reports of illegal discharges of garbage from passenger ships (pers.comm. Southern Ocean Guardianship, 2009), and since all disposal of plastic wastes from ships into the ocean is banned, and disposal of most other forms of garbage is banned within the Antarctic Special Area, it is clear that enforcement of the existing requirements should be a primary focus for further activity in the Antarctic.

ASOC submits that improved enforcement of existing provisions must be explored further, including the development of clearer directions and monitoring regarding onboard retention within the Antarctic Treaty Area and the use of reception facilities. In addition, ASOC supports the proposal for a zero discharge regime for the Antarctic with respect to garbage, which as well as ensuing full protection for Antarctic waters, should simplify

ASOC urges that this ATME support the proposal for a zero discharge approach to garbage discharges in the Antarctic, and further consider measures aimed at eliminating illegal discharge of garbage, and particularly plastics.

C. Other environmental impacts from passenger shipping. There are other impacts from passenger shipping that need greater consideration, including emissions to air and underwater noise. With increased traffic, emissions to air form an emerging issue including the contribution of Antarctic tourism shipping to

greenhouse gases.[7] Due to incomplete combustion of ship fuel, large amounts of black carbon are formed, which enhance the warming effect and decrease the reflecting capacity of land- and sea-ice.

Underwater noise is now a high-priority work programme for IMO's MEPC and ASOC urges the ATME to consider the importance of contributing to the IMO's work of identifying and addressing ways to minimize the introduction of incidental noise into the marine environment from cruise ships, in order to reduce the potential adverse impact on Antarctic marine life and consider ships routeing measures to minimise the potential for disturbance of marine wildlife, in particular cetaceans, by shipping.

ASOC urges that this ATME identify the threat from other environmental impacts from ship-borne tourism that require further consideration, including air emissions and underwater noise, and discuss potential solutions in the Antarctic context and contribute to the ongoing discussions within the IMO.

8. Emergency response and clean-up

Emergency response to environmental incidents: ASOC believes that currently emergency response, clean-up and post-spill monitoring is inadequate for the needs of the region. For instance, the incidents of the Nordkapp and of the Explorer, which resulted in the discharge of oil to Antarctic waters, have not been the subject of monitoring. It would be valuable to share information on national systems and abilities to respond to a large-scale environmental emergency and to improve the ability of national programmes and vessel programmes to respond, and establish the potential for a coordinated response from port states and flag states to a major environmental incident.

Compensation and liability: A further area that would benefit from review by the ATME concerns the existing compensation and liability regimes, particularly those annexes, conventions and protocols addressing oil pollution, hazardous and noxious substances and bunker fuel oil. ATME should consider the appropriateness of recommending adoption of the IMO's compensation and liability conventions (see Annex III) in order to achieve a regime that fulfils the requirements of Article 16 of the Protocol on Environmental Protection. In addition, the ATME should recommend that Parties redouble efforts to ensure that Annex VI of the Protocol – on Liability Arising from Environmental Emergencies – enters into force as a matter of urgency.

ASOC urges that the ATME give consideration to establishing a mechanism for a coordinated response to a major environmental ship-based emergency. The ATME should encourage rapid ratification and full implementation of IMO compensation and liability instruments and rapid ratification of Annex VI of the Protocol by ATPs.

9. Vessels flagged to non-Parties and cooperation with the IMO

ASOC has previously expressed concern about vessels flagged to non-Parties[8] and notes that several of the vessels involved in recent incidents (Annex 1) were flagged to non-Parties. While action through the Antarctic Treaty framework is a priority, it is clear there is also a strong imperative for collaboration between the ATPs and the IMO, to ensure that all ships operating in Antarctic waters are applying the same strict standards and measures.

ASOC urges that the ATME recognise the importance of integration of actions and measures agreed by the ATPs with IMO processes, and recommends that ATCPs undertake to work collectively within the IMO to address the associated environmental impacts of all vessel activities in the area.

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[7] See e.g. Ijstra T (1990): "Air pollution from shipping." *Marine Pollution Bulletin* 21:7, pp.319-320; Corbett JJ and Fischbeck P (1997): "Emissions from ships." *Science* 278, pp. 823-824; Amelung B. and Lamers M. (2007): Estimating the greenhouse gas emissions from Antarctic tourism. *Tourism in Marine Environments* 4 (2-3):121-133.

[8] ASOC (Antarctic and Southern Ocean Coalition) and UNEP (United Nations Environmental Program) (2005): *Antarctic Tourism Graphics: An overview of tourism activities in the Antarctic Treaty Area*. Published as:, XXVIII Antarctic Treaty Consultative Meeting, Information Paper 119. Stockholm, Sweden, June 2005.

Acronyms

ASOC – Antarctic & Southern Ocean Coalition

ATBA – Areas to be avoided (an IMO safety and environmental protection designation)

ATCM – Antarctic Treaty Consultative Meeting

ATCP – Antarctic Treaty Consultative Parties

ATP – Antarctic Treaty Party

ATME – Antarctic Treaty Meeting of Experts

CCAMLR – Commission for the Conservation of Antarctic Marine Living Resources

DE – IMO's Ship Design & Equipment Sub-committee

DWR – Deep water routes (an IMO ship routeing designation)

ICG – Intersessional Contact Group

IHO – International Hydrographic Organization

IMO – International Maritime Organization

MARPOL – the International Convention for the Prevention of Pollution from Ships, 1973 and Protocol, 1978

MEPC – IMO's Marine Environment Protection Committee

MOU – Memorandum of Understanding

PSC – Port state control

PSSAs – Particularly Sensitive Sea Areas (an IMO shipping management designation)

SA - Special Area designation under MARPOL where stricter discharge regulations apply

STCW – the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (ATCW), 1978

STW – IMO's sub-committee on Standards for Training and Watchkeeping

TSS – Traffic Separation Schemes (an IMO ship routeing designation)

Annex 1: Recent Shipping Incidents

The following is an illustrative list of shipping incidents in Antarctic waters from recent years that serve to demonstrate the concerns of ASOC about increased shipping and current shipping management and practices in Antarctic waters. Incidents listed relate to ships carrying tourists are marked with *.

Date of incident	Name of Ship	Type of ship	Flag	Nature of incident
February 2009	**Ocean Nova*	cruise	Bahamas	Grounded, reportedly in extremely high winds, on the Western Antarctic Peninsula.
Early December 2008	**MV Ushuaia*	cruise	Panama	Ran aground at the entrance to Wilhemina Bay, resulting in hull damage and the spillage of an unknown amount of fuel.
30 December 2007	* *M/S Fram*	cruise	Norway	Lost power along the Antarctic Peninsula and drifted into an iceberg.
23 December 2007	*Argos Georgia*	fishing	St Helena	Drifted for 15 days after losing power while fishing in the Ross Sea.
November 2007	**M/S Explorer*	cruise	Liberia	Holed by ice and sank, spilling an unknown quantity of fuel. All passengers and crew rescued.
February 2007	*Nisshin Maru*	Whale processing	Japan	Suffered an explosion and caught fire. The result was the loss of one life, and the loss of power for several days.
January 2007	**M/V Nordkapp*	cruise	Norway	Grounded at Deception Islands (S.Shetland Islands) resulting in hull damage and the spillage of an unknown amount of fuel.
November 2006	**M/V Lybov Orlova*	cruise	Malta^	Grounded at Deception Island in the South Shetland Islands.

^ The *M/V Lybov Orlova* was flagged to Malta at the time of the grounding at Deception Island; she has recently been reflagged to the Cook Islands.

Annex II:
ASOC Briefing on Priority Outcomes for a Mandatory Code for Polar Shipping

ASOC considers that a Mandatory Code addressing Antarctic Shipping should:

1. apply to the full extent of Antarctic polar waters south of the Antarctic Convergence,

2. be relevant to the full range of vessels operating south of the Antarctic Convergence, including dedicated provisions for fishing vessels,

3. require retrospective application to existing vessels where practicable, particularly where vessels are being converted for polar service,

4. include a full and unambiguous definition of polar ice-covered waters which provides clear guidance on which waters will be considered ice-covered and which waters will be considered polar but not ice-covered,

5. require that only polar class vessels with adequate ice-strengthening operate in polar ice-covered waters,

6. comprehensively address vessel safety, remote search and rescue and environmental response, and environmental protection, explicitly cross-referencing both existing instruments which are specific to Antarctic waters, and those which are relevant to Antarctic waters,

7. ensure that the highest possible standards for the stability of all vessels (both intact and damaged) are required for vessels operating in Antarctic waters, taking into account the possible extreme sea and storm conditions,

8. ensure that the threat of icing, both build-up on a vessels' structure and icing of equipment, is adequately addressed, through prevention and mitigation, and including reference to the environmental and vessel characteristics that can influence sea icing,

9. require that proper life-saving equipment and operational provisions are applied to all vessels operating in Antarctic waters,

10. require high standards of training for ice-navigators including both classroom / simulation training and "on the job" training alongside experienced ice-navigators,

11. require tailored procedures for the protection of the polar environment under normal operations be included in the ship's operating manual and tailored procedures for operations under accident conditions, which recognise the remoteness and sensitivity of polar environments, be included in the shipboard oil pollution emergency plan,

12. include comprehensive provisions for environmental protection for all vessels operating in Antarctic waters, such as more stringent provisions for sewage and grey water discharge, garbage discharge, and air emissions in sensitive polar waters,

13. address the need for the identification and establishment of mandatory navigation routes and areas to be avoided to reduce the risk of accidents, minimise impact of routine vessel operations in environmentally sensitive areas and reduce vessel disturbance to marine mammals,

14. address inspections and controls over vessels operating in the Antarctic area in order to ensure strict compliance with the highest safety and environmental standards,

15. address vessel reporting on a regular basis to the relevant regional maritime rescue coordination centres while operating in Antarctic waters, and

16. address the need for the development of a vessel traffic monitoring and information system for Antarctic waters.

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Annex III: Current status of ratification of selected IMO instruments by ATCPs at 11/09: (a) Shipping safety and environmental protection instruments

ATCP	SOLAS Convn[9] 74 / Protocol 78 / 88			SFV Protocol[10] 95	STCW 78[11] & STCW-F[12] Convn 95		MARPOL 73/78[13] Annex				OPRC[14] 90	AFS[15] Convn 01	BMW[16] Convn 04
	74	78	88		78	95	I/II	IV	V	VI			
Argentina	√	√	√		√		√	√	√		√		
Australia	√	√	√		√		√	√	√	√	√	√	
Belgium	√	√	√		√		√	√	√	√		√	
Brazil	√	√			√		√	√	√		√		
Bulgaria	√	√	√	√	√		√	√	√	√	√	√	
Chile	√	√	√		√		√	√	√	√	√		
China	√	√	√		√		√	√	√	√	√		
Ecuador	√	√	√		√		√	√	√	√	√		
Finland	√	√	√		√		√	√	√	√	√		
France	√	√	√	√	√		√	√	√	√	√	√	√
Germany	√	√	√	√	√		√	√	√	√	√	√	
India	√	√	√		√		√	√	√		√		
Italy	√	√	√	√	√		√	√	√	√	√		
Japan	√	√	√		√		√	√	√	√	√	√	
Republic of Korea	√	√	√		√		√	√	√	√	√	√	
Netherlands	√	√	√	√	√		√	√	√	√	√	√	
New Zealand	√	√	√		√		√		√		√		
Norway	√	√	√	√	√	√	√	√	√	√	√	√	√
Peru	√	√	√		√		√	√	√		√		
Poland	√	√	√		√		√	√	√	√	√	√	
Russian Federation	√	√	√		√	√	√	√	√		√		
South Africa	√	√			√		√		√				√
Spain	√	√	√	√	√	√	√	√	√	√	√	√	√
Sweden	√	√	√	√	√		√	√	√	√	√	√	
Ukraine	√	√	√		√	√	√	√	√	√			
United Kingdom	√	√	√		√		√	√	√	√	√		
United States	√	√	√		√		√		√	√	√		
Uruguay	√	√	√		√		√	√	√		√		

[9] International Convention for the Safety of Life at Sea (SOLAS), 1974. The Protocol of 1978 – tanker safety and pollution prevention. The Protocol of 1988 – harmonised system of surveys and certification.
[10] The Torremolinos International Convention for the Safety of Fishing Vessels (SFV) Protocol 1993.
[11] International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978
[12] International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995.
[13] International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78). Annex I oil, Annex II noxious liquid substances in bulk, Annex IV sewage, Annex V garbage, Annex VI air pollution.
[14] International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990.
[15] International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS), 2001.
[16] International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM), 2004.

Continued: (b) Liability and Compensation instruments

ATCP	Bunkers Convn 01[17]	HNS 96[18]	FUND 71 / Protocol 76/ 92/ 03[19]				CLC 69/ Protocol 76 / 92[20]		
			71	76	92	03	69	76	92
Argentina					√				√
Australia	√		d	√	√	√	d	√	√
Belgium	√		d	√	√	√	d	√	√
Brazil							√		
Bulgaria	√				√				√
Chile							√		√
China	√		d				d	d	√
Ecuador					√		√		√
Finland	√		d	√	√	√	d	√	√
France			d	√	√	√	d	√	√
Germany	√		d	√	√	√	d	√	√
India			d	√	√		d	√	√
Italy			d	√	√	√	d	√	√
Japan			d	√	√	√	d	√	√
Republic of Korea	√		d		√		d	√	√
Netherlands			d	√	√	√	d	√	√
New Zealand			d		√		d		√
Norway	√		d	√	√	√	d	√	√
Peru							√	√	√
Poland	√		d	√	√	√	d	√	√
Russian Federation	√	√	d	√	√		d	√	√
South Africa					√		√		√
Spain	√		d	√	√	√	d	√	√
Sweden			d	√	√	√	d	√	√
Ukraine									√
United Kingdom	√		d	d	√	√	d	d	√
United States									
Uruguay					√				√

[17] International Convention on Civil Liability for Bunker Oil Pollution Damage (Bunkers Convention), 2001.

[18] International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996

[19] International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND), 1971, 1976 Protocol, 1992 Protocol, 2003 Protocol.

[20] International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969, 1976 Protocol, 1992 Protocol.